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A first embodiment of the invention is shown in Figure 2 and provides a simple to implement downlink diversity scheme. The arrangement 20 comprises two antennas, 22, 24. Each antenna receives a different signal due to the multi-path environment. These signals are then amplified by low noise amplifiers 24 to provide a low noise front end to the receiver, 26. One signal is time delayed by optional delay means 28 by a period τ , where τ is the chip rate or the inverse of the Spread bandwidth which signals are switched at as appropriate, to a two-way power combiner, 30, the operation of which is controlled by control means 34. A filter (not shown) is provided to filter out adjacent channel interference. The combiner scheme conveniently employs RAKE receivers and makes use of the ability of RAKE receivers to combine two time delayed multi-paths in an optimal manner. Other arrangements operable to provide a signal metric are possible instead of the RAKE receiver.

In the Claims

Please delete Claims 1 to 22 currently on file and replace with new claims 23 to 55.

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23. A wireless receiver arrangement comprising:
a plurality of antennas forming a diversity antenna arrangement;
a receive path associated with each antenna;
a plurality of switches, each switch associated with one of said receive paths;
a combiner arranged to receive the output of said plurality of switches;
control means, arranged to individually control said plurality of switches; and
responsive to signal assessment means;
wherein, in operation, signals received from at least one of said plurality of antenna are selectively switched into the receive path by said control means according to a predetermined metric provided by said signal assessment means.
24. A wireless receiver arrangement as claimed in claim 23, wherein said signal assessment means provides a signal quality receiver metric.

25. A wireless receiver arrangement as claimed in claim 23, wherein each of the receive paths except for one is provided with a delay element arranged to time delay signals received by the antenna associated with said receive path.

26. A wireless receiver arrangement as claimed in claim 23, wherein the combiner switches signals into the receive path and signals currently in the receive path out of the receive path.

27. A wireless receiver arrangement as claimed in claim 23, wherein the signals include diversity signals and at least one of said antenna is a diversity antenna.

28. A wireless receiver arrangement as claimed in claim 23, wherein the wireless receiver arrangement uses a code division multiple access technique.

29. A wireless receiver arrangement according to claim 23 wherein the signal assessment means assesses the carrier to noise power ratio of received signals.

30. A wireless receiver arrangement according to claim 23 wherein the plurality of antennas re separated by distance, whereby spatial diversity is employed to differentiate signals.

31. A wireless receiver arrangement according to claim 23 wherein the plurality of antennas have a different polarization, whereby polarization diversity is employed to differentiate signals.

32. A wireless receiver arrangement according to claim 23 wherein the plurality of antennas support both spatial and polarization diversity.

33. A wireless receiver arrangement according to claim 23, wherein hysteresis is employed to control the switching.

34. A wireless receiver arrangement according to claim 23, wherein at least one antenna comprises a rake receiver arranged to combine signals which are spatially separated.

35. A wireless receiver arrangement according to claim 23, wherein the receive paths comprise N diverse receive paths where ($N > 2$) and wherein there are n receive paths (where $n = N-1$) each having delay means operable to delay the n signals with respect to each other by a period τ , corresponding to the chip rate of a spread spectrum transmission scheme in accordance with which said n signals are provided.

36. A wireless receiver arrangement according to claim 23, wherein the receive paths comprise two diverse receive paths and one receive path is provided with a delay means operable to delay signals in the receive path by a period τ , corresponding to the chip rate of a spread spectrum transmission scheme in accordance with which said n signals are provided and wherein MLSE demodulation techniques are employed.

37. A wireless receiver arrangement according to claim 23, wherein the predetermined metric provided by said signal assessment means comprises a multi-path metric which can be set so that only one of said plurality of antenna is employed, and further comprising a rake receiver employed to combine signals which are spatially separated.

39. A method of operating a wireless receiver arrangement comprising a plurality of antennas forming a diversity antenna arrangement, the method comprising:

receiving signals along at least one of a plurality of receive paths, each receive path associated with an antenna;

switching received signals using a plurality of switches, each switch associated with the receive path of one of said plurality of antennas;

receiving the output of at least one of said plurality of switches using a combiner;

individually controlling said plurality of switches using control means responsive to signal assessment means;

selectively switching signals received from at least one of said plurality of antenna into the receive path using said control means according to a predetermined metric provided by said signal assessment means.

40. A method as claimed in claim 39, wherein the combiner switches signals into the receive path and signals currently in the receive path out of the receive path.

41. A method as claimed in claim 39, wherein the signals include diversity signals and at least one of said antenna is a diversity antenna.

42. A method as claimed in claim 39, wherein the wireless receiver arrangement uses a code division multiple access technique.

43. A method according to claim 39, wherein the signals are switched only when such signals contribute to the carrier to noise ratio.

44. A method according to claim 39, wherein the plurality of antennas are separated by distance, whereby spatial diversity is employed to differentiate signals.

45. A method according to claim 39 wherein the plurality of antennas are arranged to have a different polarization, whereby polarization diversity is employed to differentiate signals.

46. A method according to claim 39 wherein the plurality of antennas are arranged to support both spatial and polarization diversity.

47. A method according to claim 39, wherein hysteresis is employed to control the switching.

48. A method according to claim 39, wherein at least one antenna comprises a rake receiver arranged to combine signals which are spatially separated.

49. A method according to claim 39, wherein the receive paths comprise N diverse receive paths where $(N > 2)$ and wherein N receive paths (where $N=1$) each having delay means operable to delay the N signals with respect to each other by a period τ , corresponding to the chip rate of a spread spectrum transmission scheme in accordance with which said n signals are provided.

50. A method according to claim 39, wherein the receive paths comprise two diverse receive paths and one receive path is provided with a delay means operable to delay signals in the receive path by a period τ , corresponding to the chip rate of a spread spectrum transmission scheme in accordance with which said n signals are provided and wherein MLSE demodulation techniques are employed.